

AMENDMENTS TO THE CLAIMS

Listing of Claims

1-18 (Cancelled)

19. (Currently amended) A method of ~~generating for~~ increasing the amino acid content of a transformed plant cell, plant tissue, plant or progeny thereof with a modified amino acid content, comprising

~~— (a) transforming a growing a stably transformed, transgenic plant cell, plant tissue, plant or progeny thereof with comprising an ATP/ADP translocator gene encoding an ATP/ADP translocator under conditions wherein said ATP/ADP translocator is overexpressed and the content of one or more essential amino acid of said plant cell, plant tissue or plant or progeny thereof is increased relative to a non-transformed plant cell, plant tissue or plant; and using said transformed plant or progeny thereof as a useful plant or fodder plant having an increased amino acid content.~~

~~— (b) optionally regenerating the transformed plant cell or plant tissue from step (a) into a plant; and~~

~~— (c) further optionally producing transformed plants from the plant produced in step (a) or (b);~~

~~— wherein a regulatory sequence or a gene copy number of the ATP/ADP translocator gene is modified, and wherein the amount of one or more amino acids in the transformed plant cell, plant tissue or plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant.~~

20. (Previously presented) The method of claim 19 wherein the transformed plant cell, plant tissue, plant or progeny thereof has an increased transport capacity for ATP into the chloroplastic membrane of said transformed plant cell, plant tissue, plant or progeny thereof.

21-23. (Canceled)

24. (Previously presented) The method of claim 19 wherein the ATP/ADP translocator gene comprises a naturally found, chemically synthesized, modified, or artificially generated nucleotide sequence.
25. (Previously presented) The method of claim 19 wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 1.
26. (Previously presented) The method of claim 25 wherein the ATP/ADP translocator gene comprises one or more operably linked, regulatory nucleotide sequences.
27. (Previously presented) The method of claim 25 wherein the ATP/ADP translocator gene comprises an upstream operably linked promoter.
28. (Previously presented) The method of claim 19 wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 2.
29. (Previously presented) The method of claim 28 wherein the nucleotide sequence is in antisense orientation.
30. (Previously presented) The method of claim 28 wherein said ATP/ADP translocator gene comprises one or more operably linked, regulatory nucleotide sequences.
31. (Previously presented) The method of claim 28 wherein said ATP/ADP translocator gene comprises an upstream operably linked promoter.
32. (Previously presented) The method of claim 19 wherein said ATP/ADP translocator gene comprises a heterologous nucleotide sequence that encodes an ATP/ADP translocator or an allelic variation or isoform thereof.
33. (Previously presented) The method of claim 19 wherein the transformed plant or progeny thereof is potato or maize.

34. (Previously presented) The method of claim 19, wherein the amino acid(s) is(are) selected from the group consisting of lysine, methionine, threonine, valine, tryptophan, histidine, isoleucine, and leucine, or combinations thereof.
35. (Currently amended) A ~~The~~ method of ~~generating a transformed plant cell, plant tissue, plant or progeny thereof with a modified amino acid content, comprising claim 19 wherein~~
~~— (a) transforming a the stably transformed, transgenic plant cell, plant tissue or tissue, plant or progeny thereof with comprises a gene structure comprising an the ATP/ADP translocator gene and a regulatory sequence operably linked to said gene structure[[:]]~~
~~— (b) optionally regenerating the transformed plant cell or plant tissue from step (a) into a plant; and~~
~~— (c) further optionally producing transformed plants from the plant produced in step (a) or (b);~~
~~— wherein a regulatory sequence or a gene copy number of the ATP/ADP translocator gene is modified, and wherein the amount of one or more amino acids in the transformed plant cell, plant tissue or plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant.~~
36. (Currently amended) A ~~The~~ method of ~~generating a transformed plant cell, plant tissue, plant or progeny thereof with a modified amino acid content, comprising claim 19 wherein~~
~~— (a) transforming a the stably transformed, transgenic plant cell, plant tissue or tissue, plant or progeny thereof with comprises a vector comprising an the ATP/ADP translocator gene[[:]]~~
~~— (b) optionally regenerating the transformed plant cell or plant tissue from step (a) into a plant; and~~

- ~~— (e) further optionally producing transformed plants from the plant produced in step (a) or (b);~~
- ~~— wherein a regulatory sequence or a gene copy number of the ATP/ADP translocator gene is modified, and wherein the amount of one or more amino acids in the transformed plant cell, plant tissue or plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant.~~
37. (Previously presented) The method of claim 36, wherein the vector further comprises one or more regulatory nucleotide sequences.
38. (Previously presented) The method of claim 37, wherein the one or more regulatory nucleotide sequences are selected from the group consisting of promoters, terminators, translation enhancers, nucleotide sequences for replication in a suitable host cell, nucleotide sequences for integration into a genome, and combinations thereof.
39. (Currently amended) The method of claim 36, wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 1 or SEQ ID NO: 2 in antisense orientation.
40. (Canceled)
41. (New) A method for preparing a foodstuff having a modified amino acid content, comprising growing a stably transformed, transgenic plant cell, plant tissue or plant or progeny thereof comprising an ATP/ADP translocator gene encoding an ATP/ADP translocator under conditions wherein said ATP/ADP translocator is expressed and the amino acid content of said plant cell, plant tissue, plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant; and using said plant cell, plant tissue, plant or progeny thereof as a foodstuff with modified amino acid content.
42. (New) The method of claim 41 wherein the modified amino acid content is an increase in one or more essential amino acids.

43. (New) The method of claim 41 wherein the modified amino acid content is an increase in total amount of free amino acids.
44. (New) The method of claim 41 wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
45. (New) A method for modifying the amino acid content of a plant or progeny thereof, comprising growing a stably transformed, transgenic plant cell, plant tissue, plant or progeny thereof comprising an ATP/ADP translocator gene encoding an ATP/ADP translocator under conditions wherein the gene copy number or regulatory sequence of said ATP/ADP translocator is modified and wherein the amount of one or more essential amino acid of said plant cell, plant tissue or plant or progeny thereof is modified simultaneously relative to a non-transformed plant cell, plant tissue or plant; and using said transformed plant or progeny thereof as a useful plant or fodder plant having a modified amino acid content.
46. (New) The method of claim 45 wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
47. (New) The method of claim 45 wherein the transformed plant or progeny thereof is used directly as a fodder plant.
48. (New) The method of claim 19 wherein the increased amino acid content is an increase in total amount of free amino acids in said plant cell, plant tissue or plant or progeny thereof relative to a non-transformed plant cell, plant tissue or plant.
49. (New) The method of claim 19 wherein the transformed plant or progeny thereof is used directly as a fodder plant.